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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,524	02/05/2004	Jeffrey Lloyd	60130-2011;04MRA0100	5397
26096	7590	01/31/2006	EXAMINER	
CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009			KRAMER, DEVON C	
			ART UNIT	PAPER NUMBER
			3683	

DATE MAILED: 01/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Advisory Action</b> <b>Before the Filing of an Appeal Brief</b>	Application No. 10/772,524	Applicant(s) LLOYD, JEFFREY	
	Examiner Devon C. Kramer	Art Unit 3683	

**--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

THE REPLY FILED 20 January 2006 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

- a) ☐ The period for reply expires \_\_\_\_\_ months from the mailing date of the final rejection.  
b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on \_\_\_\_\_. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

#### AMENDMENTS

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because  
(a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);  
(b) ☐ They raise the issue of new matter (see NOTE below);  
(c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or  
(d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: \_\_\_\_\_. (See 37 CFR 1.116 and 41.33(a)).


4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).  
5. ☐ Applicant's reply has overcome the following rejection(s): \_\_\_\_\_.  
6. ☐ Newly proposed or amended claim(s) \_\_\_\_\_ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).  
7. ☐ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.  
The status of the claim(s) is (or will be) as follows:  
Claim(s) allowed: \_\_\_\_\_.  
Claim(s) objected to: \_\_\_\_\_.  
Claim(s) rejected: \_\_\_\_\_.  
Claim(s) withdrawn from consideration: \_\_\_\_\_.

#### AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).  
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).  
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

#### REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because:  
See Continuation Sheet.  
12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08 or PTO-1449) Paper No(s). \_\_\_\_\_  
13. ☐ Other: \_\_\_\_\_.

  
**DEVON C. KRAMER**  
**PATENT EXAMINER**

Devon C Kramer  
Primary Examiner  
Art Unit: 3683

Continuation of 11. does NOT place the application in condition for allowance because: Applicant argues that element 9 is not a flexible material. Please note that element 9 is disclosed as a roll-off piston and is depicted as an elastomer material . .



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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
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EXAMINER
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ART UNIT	PAPER
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20060125

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner for Patents

Attached, please find a translation of the DE 10009212 to Schffler et al.

DEVON C. KRAMER  
PATENT EXAMINER  
*Devon C. Kramer*  
1/25/06

Devon C Kramer  
Primary Examiner  
Art Unit: 3683

PTO 06-1332

German Patent  
Document No. DE 100 09 212 A1

**AIR SPRING WITH ADDITIONAL VOLUME**  
[Luftfeder mit Zusatzvolumen]

Stefan Schiffler et al

UNITED STATES PATENT AND TRADEMARK OFFICE  
Washington, D.C. December 2005

Translated by: Schreiber Translations, Inc.

Country : Federal Republic of Germany

Document No. : DE 100 09 212 A1

Document Type : Document laid open/first  
publication

Language : German

Inventor : Stefan Schiffler and Wolfgang Kolb

Applicant : Mannesmann Sachs Inc.,  
Schweinfurt, Federal Republic of  
Germany

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Application Date : February 26, 2000

Publication Date : September 27, [illegible]

Foreign Language Title : Luftfeder mit Zusatzvolumen

English Title : **AIR SPRING WITH ADDITIONAL VOLUME**

### **Air Spring with Additional Volume**

A spring strut consisting of an air spring and a vibration damper, wherein a spring chamber delimited by a bellows is actively connected to an additional volume and the vibration damper has a receptacle on which a roll-off piston for the bellows is arranged. A hoseless channel, which is integrated in the spring strut, is provided for connecting the spring chamber delimited by the bellows to the additional volume.

### **Specification**

The invention concerns a spring strut consisting of an air spring and a spring support, in particular a vibration damper, pursuant to the preamble of patent claim 1.

In a spring chamber delimited by a bellows, which forms a component together with a vibration damper, is frequently required a spring characteristic that is realized with a corresponding additional volume. The entire spring chamber consists then of the spring chamber delimited by the bellows and the additional volume, wherein a throttle effect between the bellows chamber and the additional volume is undesirable for a

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<sup>1</sup> Numbers in the margin indicate pagination in the foreign text.

flawless function of the air spring. For this reason, the connecting line between the two air chambers must be provided with a large cross section, which can occur only with an extremely pressure-resistant and therefore expensive connecting line, which is usually configured as a hose line. In order to prevent the throttling effect between the spring chamber and the additional volume are also required connecting screw joints having a large diameter.

It is an object of the invention to create a spring strut that has a spring chamber delimited by a bellows, in which the spring chamber has a simple connection to the additional volume that is safe to operate and is reasonably priced.

This object is attained in accordance with the invention with the characteristic features of patent claim 1. Further advantageous embodiments and/or developments are the object of the dependent claims.

Through the connection of the spring chamber delimited by the bellows to the additional volume by means of a channel that is integrated in the spring strut is created a compact component, which makes possible a direct connection to the additional volume and is secured against external damage. As a consequence of this direct connection, an expensive hose connection is avoided and a connection with a large passage



cross section is made possible. The channel is also configured in such a way that a throttle-free connection between the spring chamber delimited by the bellows and the additional volume is ensured. A great freedom for the configuration and arrangement of the additional volume is retained and the air reservoir for the additional volume must only have a corresponding connection for the spring strut. In this way, for example, the air reservoir having the additional volume can also be provided with a joint part for attachment to the vehicle. The additional volume can also be formed by a part of the vehicle, such as a correspondingly configured axle. The receptacle of the vibration damper, and thus the spring strut, is connected at the same time via the connection to the axle and to the additional volume.

The channel between the spring chamber delimited by the bellows and the additional volume are preferably configured with a large cross section, so that the channel acts as part of the additional volume. Such a channel is created, for example, by the component that is connected to the receptacle of the vibration damper, which forms a considerably large cross section with the outer surface of the receptacle. A receptacles such as this, which is provided with a channel, can be produced as a casting or the component is welded on the receptacle. A

configuration that is simple to design is created if the channel ends in the bottom of the receptacle and the bottom has at the same time the connection for the additional volume. The connection in the bottom of the receptacle is usually configured as a screw connection, but it is possible without problem to sealingly connect the additional volume to the bottom by means of a plug connection that is known in machine construction.

The additional volume is normally determined by the vehicle manufacturer with regard to shape, volume and arrangement and is provided with the connecting part for the spring strut. It is proposed that part of the additional volume be formed by means of an accordingly configured roll-off piston. For a simple connection of the roll-off piston to the receptacle of the spring strut is provided a retaining ring, which forms a passage cross section with the channel and is sealingly mounted on the outer surface of the retaining ring of the roll-off piston.

The invention will now be described in more detail with reference to the embodiments shown in the drawings, wherein:

Fig. 1 shows a spring strut in longitudinal section;

Fig. 2 shows a cross section through the spring strut of Fig. 1 along the section line A-B; and

Fig. 3 shows a spring strut having a roll-off piston that forms a part of the additional volume.

The spring strut 1 shown in Fig. 1 consists of an air spring 3 and a spring support having the exemplary design of a vibration damper 5. A spring chamber 11 is delimited on the outside by a bellows 7, which is mounted, on the one hand, on a part that is fixedly mounted on the body and, on the other hand, on a roll-off piston 9. The spring chamber 11 is connected via a channel 15 to an additional volume 13, while this additional volume 13 is only shown in schematic representation, since the additional volume is usually arranged in an air reservoir, which is designed by the vehicle manufacturer in accordance with the desired spring characteristic with regard to shape and volume and is installed at a suitable location in the vehicle. The channel 15 is delimited on the outside by the outer wall of the receptacle 17 and by a component 19 mounted thereon and ends in a bottom 23, which has the connection for the additional volume 13. A retaining ring 27 provided with a large passage cross section 29 is fixedly connected to the receptacle 17 in order to ensure a simple attachment of the roll-off piston 9 on the vibration damper 5.

The cross section through the receptacle 17 of the vibration damper along the section line A-B of Fig. 1, which is shown in Fig. 2, shows the extensive sickle-shaped cross section 21 of the channel that is delimited on the outside by the

component 19. The component 19 can be welded on the receptacle 17 or it is conceivable to produce the receptacle 17 with the component 19 as a casting or as an extruded part or deep-drawn part according to the usual production processes.

*The embodiment of Fig. 3 differs from that of Fig. 1 essentially in that the roll-off piston 9 forms a partial chamber 25 for the spring chamber, which in this case consists of the spring chamber 11 delimited by the bellows 7, the partial chamber 25, the volume of the channel 15, and the additional volume 13. In the partial chamber 25 are provided ribs, which are supported by the receptacle and whose gas-tight connection to the retaining ring 27 is provided at the lower end of the roll-off piston 9. The other reference numerals shown in Fig. 3 correspond with regard to the components and their arrangement to those shown in Fig. 1.*

*The channel 15 shown in the figures between the spring chamber 11 delimited by the bellows 7 and the additional volume 13 can be integrated on the most different ways in the spring strut. For example, the channel 15 can be configured as a pipeline and guided alongside the receptacle 17, so that this pipeline is sealingly mounted in the retaining ring 27, on the one hand, and is connected to the additional volume, on the other hand.*

Patent Claims

1. A spring strut consisting of an air spring and a spring support, in particular a vibration damper, in which a spring chamber delimited by a bellows is actively connected to an additional volume and the vibration damper has a receptacle on which a roll-off piston for the bellows is arranged, wherein the connection of the spring chamber (11) delimited by the bellows (7) to the additional volume (13) is formed by a channel (15) that is integrated in the spring strut (1).
2. The spring strut of claim 1, wherein the channel (15) forms an essentially throttle-free connection between the spring chamber (11) and the additional volume (13).
3. The spring strut of claims 1 and 2, wherein the channel (15) is configured as a part of the additional volume (13).
4. The spring strut of claims 1 to 3, wherein the channel (15) has a component (19) located on the receptacle (17) of the vibration damper (5), which forms a sickle-shaped cross section (21) with the outer surface of the receptacle (17).
5. The spring strut of one or several of the claims 1 to 4, wherein the channel (15) ends in a bottom (23) of the

receptacle (17) and the bottom (23) forms the connection for the additional volume (13).

6. The spring strut of one or several of the claims 1 to 5, wherein the additional volume (13) is mounted directly on the bottom (23) of the receptacle (17) by means of a screw connection.

7. The spring strut of one or several of the claims 1 to 5, wherein the additional volume (13) is sealingly arranged on the bottom (23) of the receptacle (17) by means of a plug connection.

8. The spring strut of one or several of the claims 1 to 7, wherein the additional volume (13) is arranged in the area of the vehicle axle.

9. The spring strut of one or several of the preceding claims, wherein a partial chamber (25) of the additional volume (13) is formed by the roll-off piston (9).

10. The spring strut of one or several of the claims 1 to 9, wherein a retaining ring (27), in which a passage cross section (29) is arranged between the spring chamber (11) and the channel (15), is mounted between the roll-off piston (9) and the channel (15).

Fig.1

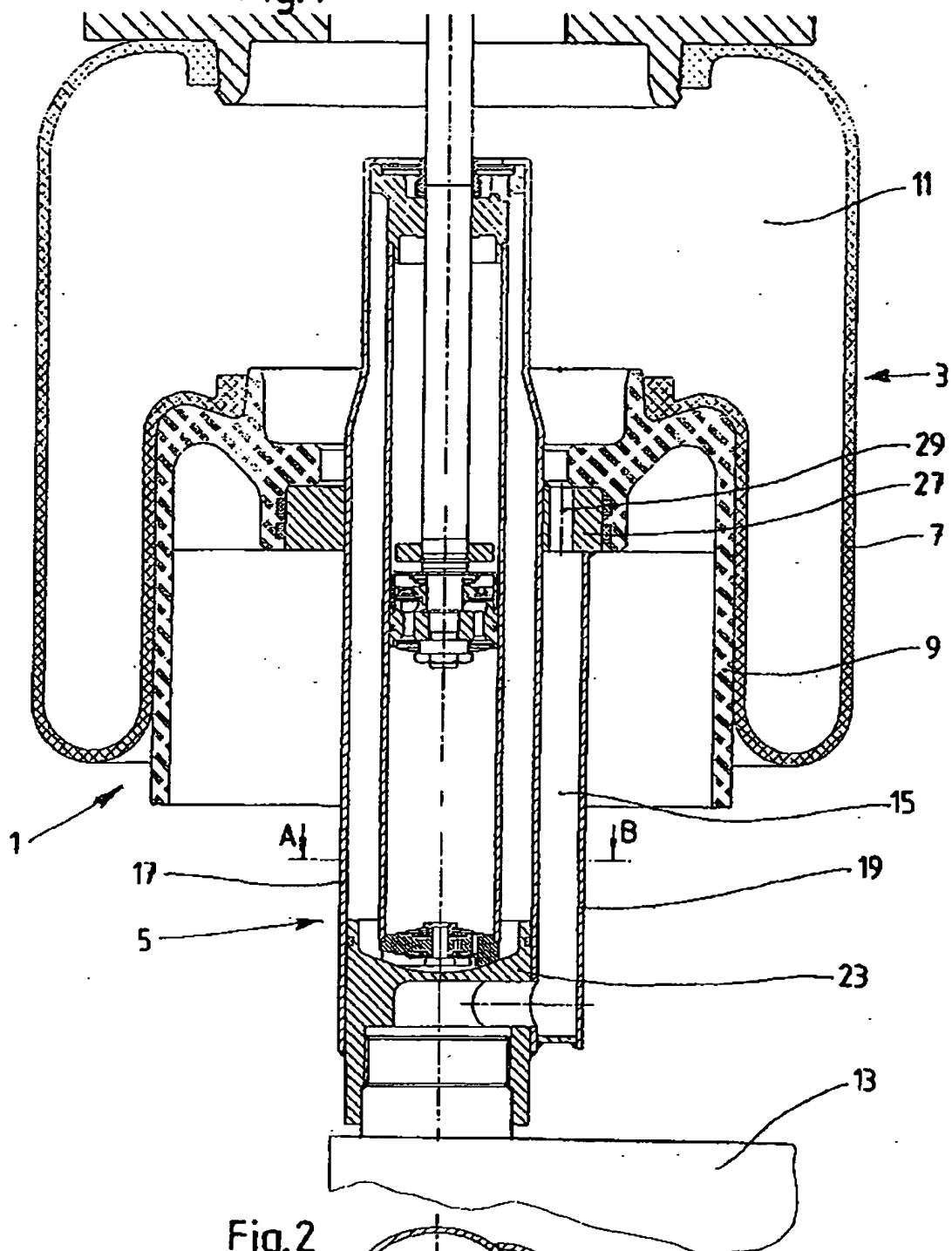


Fig.2  
A-B

